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TECHNOLOGY

June 27, 1953

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

"Wings" for Boats

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A SCIENCE SERVICE PUBLICATION

MEDICINE

Bleach Freckles, Skins

Purified monobenzyl ether of hydroquinone, finely milled and made into ointment, removes dark color from skin, such as found in liver spots and freckles.

➤ GOOD RESULTS with chemical treatment of liver spots, severe freckles, the darkened skin of Addison's disease and berlock dermatitis, in which the skin turns dark after use of certain perfumes, are reported by Drs. Aaron Bunsen Lerner and Thomas B. Fitzpatrick of Portland, Ore., in the *Journal of the American Medical Association* (June 13).

The chemical used is a purified and finely milled monobenzyl ether of hydroquinone. It was made into an ointment which has been given the trade name Benoquin by the Paul B. Elder Co. of Bryan, Ohio.

In answer to the question whether this chemical can be used to remove all the pigment, or color, from a dark skinned person, such as a Negro, the doctors state:

"In general the preparations reported herein cannot be used for this purpose unless a concentrated effort is made over a long period of time.

"Even so, results would be questionable; however, in certain special cases complete depigmentation may be practicable, as in patients with vitiligo or those predisposed to this disorder."

Vitiligo, or piebald skin, is a condition in which smooth light colored patches appear.

Two Negro patients who had a disfiguring vitiligo of the face and body used the ointment on a single arm for long periods of time. They became completely depigmented except for the air and eyes, which kept their normal coloring. One became pregnant after she had lost her dark color but was still under treatment. She gave birth to a normally colored baby.

It takes from three weeks to six months for the chemical to remove the dark color from the skin. During this time the ointment is used twice daily. After depigmentation has occurred, it is used once a day and later once a week. After treatment is stopped, the dark color comes back in two months or longer.

Some patients get a reddening and swelling of the skin from the chemical. Sensitization occurred in 13% of patients.

The chemical is not poisonous and it is possible it could be given by mouth, but the Portland doctors have not tried this method.

It was of little or no value in cafe au lait spots or dark moles.

The Portland doctors treated 84 patients with various darkened skin conditions and found that 64 showed good results. They do not recommend the treatment for mild or moderate freckles, because these usually fade out during the winter and because there is relatively high skin sensitization to the drug.

The work with this chemical was carried out over four years at Western Reserve Medical School, Cleveland, the Mayo Foundation, Rochester, Minn., University of Michigan Medical School, and University of Oregon Medical School.

Science News Letter, June 27, 1953

GENERAL SCIENCE

Warn on Reservist Policy

► EVERBODY who has been on active military duty since June, 1951, can be called back to uniform in an emergency or a war no matter how essential his job is.

This would seriously disrupt the war-making industrial potential of the nation. More than 25% of all engineers and scientists now engaged in research and development programs in the country could be placed in uniform by the Defense Department, the Engineering Manpower Commission declared in New York.

Dr. Thomas H. Chilton, chairman of the commission, a body set up by the major engineering societies, reported that these are the very people on whom we depend for our continued technological and economic superiority. He said that "this situation is the logical result of the operation of our military service laws as they are now written."

Public Law 51, passed in June, 1951, creates a compulsory reserve into which go all those leaving the service.

This compulsory reserve will shortly exceed 10,000,000. Every year it includes more people who are vital to the defense production economy, Dr. Chilton pointed out.

"The recalling of reservists to active duty in time of emergency or war rests solely in the hands of the Department of Defense. This situation," Dr. Chilton cautioned, "can create chaos in the industrial support of mobilization."

Dr. Chilton said that great industrial dislocation was caused at the start of the Korean Action by indiscriminate call-up of reservists. Many were members of scientific research teams or were engineers vital to production of war goods.

Dr. Chilton and representatives of other groups strongly supported a bill which would set up a National Manpower Board to control recall of reservists in time of war. The Board would be in the President's office and thus would be able to control Defense Department reservist call ups.

Represented among the groups were the American Chemical Society, the American Institute of Physics, the Armed Forces Chemical Association, the U. S. Chamber of Commerce, the National Association of Manufacturers, the Scientific Manpower Commission, the National Electrical Manufacturers Association and the Manufacturing Chemists Association.

The Congress of Industrial Organizations also supports the bill, it was learned.

Science News Letter, June 27, 1953

CHEMISTRY

Spanish Moss May Yield Household Wax

➤ FURNITURE WAX may soon come from Spanish moss which festoons trees of the Southland's swamps.

Freshly gathered Spanish moss contains a green colored wax amounting to five percent of the plant's weight. This wax is easily purified and gives a hard, glossy finish to woodwork and leather, comparable to commercial waxes. Drs. Seldon D. Feurt and Lauretta E. Fox of the University of Florida College of Pharmacy, reporting in *Science* (May 29), urge some industrial organization to explore this possibility.

Science News Letter, June 27, 1953

BIOCHEMISTRY

Fatty Substance Kills Cancer Cells

➤ A NEW clue to the chemical control of cancer is a fatty substance isolated from the small intestines of mice and rats. It destroys certain cancer cells in test tube studies.

Dr. Leslie R. Bennett, assistant professor of radiology at the University of California at Los Angeles School of Medicine, reports that the precise chemical nature of the material has not yet been determined.

The substance exhibited no effect upon most normal tissues in test tube studies. It does, however, possess slight damaging properties to blood-forming cells.

The relatively low incidence of primary cancer in the small intestine suggested that its tissues might contain substances which prevent changes ultimately resulting in cancer. The fatty substance isolated in the study might be one of the cancer-prevention factors naturally occurring in these organs.

The material has not been used in the treatment of established cancer in experimental animals.

Science News Letter, June 27, 1953

SURGERY

Shaking Palsy Stopped

Accidental discovery during an operation has led to relief of nine patients disabled with shaking or rigidity, or both. Anterior choroidal artery is crushed.

➤ A NEW artery crushing operation, discovered by accident, has relieved some patients of rigidity and involuntary movements in the condition doctors call Parkinsonism but which the layman often calls shaking palsy.

One 36-year-old man, completely disabled and living like a vegetable for eight years, is now playing golf, six weeks after the operation.

The new operation was announced by Dr. Irving S. Cooper of New York University Post-Graduate Medical School, New York, at the meeting of the American Neurological Association in Atlantic City.

The artery that is crushed lies inside the head and originates from the internal carotid artery. It is called the anterior choroidal artery. There is one on each side of the head. In some cases both arteries are operated on, in others, only one.

The object is to affect the nerve structures supplied by this artery. Disease of these structures presumably is responsible for the shaking and rigidity in the patients.

So far the operation has been performed on ten patients disabled by shaking or rigidity, or both. One died but all the others have improved. The operation was tried on a second group of five patients with other nerve-motion disorders in which there are uncontrollable worm-like movements of hands and feet or St. Vitus-dance-like movements. Some were helped, others were not. One developed muscular weakness on one side which is improving.

The operation was discovered when Dr. Cooper was trying to relieve a 39-year-old man incapacitated by shaking or palsy on one side. The surgeon had planned to cut a part of the brain stem. Before he got that far, the left anterior choroidal artery was torn and bled profusely.

To stop the hemorrhage, the artery was squeezed closed between silver clips. Not knowing what would result from this unplanned closure of the artery, the surgeons stopped the operation at this point.

The patient got along all right, the "most notable" feature being the disappearance of the shaking. This has been relieved now for nine months and the patient is working and earning a living.

Some of the patients suffered Parkinsonism as a sequel to the brain disease, encephalitis or "sleeping sickness" as it is popularly known.

While Dr. Cooper makes no attempt to "define" the possibilities of this operation as a remedy for various conditions of shaking and rigidity, he thinks further attempts should be made to see what can be done for advanced cases of such disorders by this surgical approach.

Science News Letter, June 27, 1953

ENTOMOLOGY

Tent Caterpillar Moths Emerging From Cocoons

► THE GREAT colonies of tent caterpillars that have been nesting in apple, wild cherry and other trees since early spring, greedily devouring their leaves, have about all broken up. These striped caterpillars, *Malacosoma americana,* have been abandoning their community tent-like nests, which can attain two feet in length, and going to secluded spots to weave their individual cocoons.

A week or two later, dull reddish brown moths emerge from the cocoons, they then mate, and each female lays all her eggs in a single ring-like cluster about a twig. The eggs will remain dormant until early next spring.

When the eggs hatch, the caterpillars remain together and build a collective tent in the fork of a tree. The caterpillars leave the tent only to forage for food, and then they spin a silken thread wherever they go to lead them back home. As the caterpillars grow in size, they migrate to larger branches to build greater webs.

Best time to fight the pesty tent caterpillars is in early spring. The webs should be destroyed early in the morning, late in the evening or on a cool day, when the caterpillars are not scattered about the tree.

Science News Letter, June 27, 1953

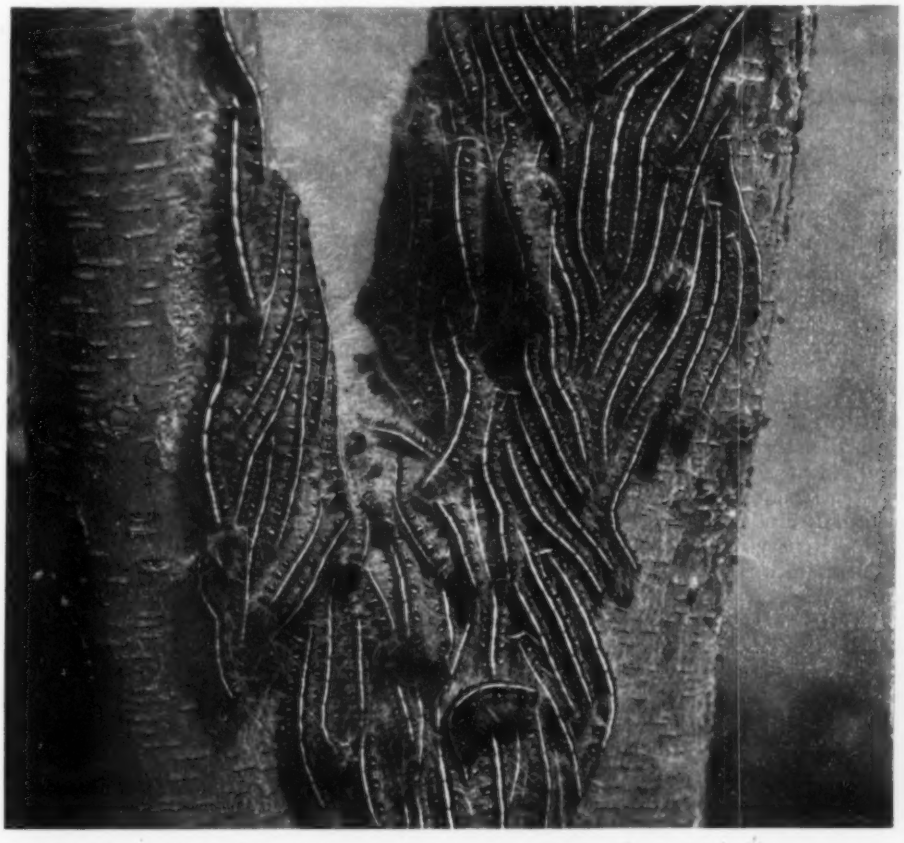
NUTRITION

Introduce New Cheese For Factory Production

➤ A NEW mild, creamy, smooth cheese, as yet unnamed, was announced to the American Dairy Science Association meeting in Madison by dairy specialists from the University of Wisconsin. Similar to process cheese, it has a flavor all its own.

It will ripen as fast as any cheese on the market, in one or two months, and is suitable for factory production.

Science News Letter, June 27, 1953



CATERPILLAR TIME—Though they grew up in a great common group, these tent caterpillars have been separating, each to spin its own private cocoon. The adult moths emerge three weeks later.

MEDICINE

Clue to Leprosy Spread

► THE ANCIENT and still practised Buddhist custom of shaving the heads of new babies has given two U. S. Army doctors a clue to how leprosy spreads.

The disease is caught by an infant through skin-to-skin contact with a leprous person, the doctors, Col. Edward A. Cleve and Col. Francis W. Pruitt, report from the Letterman Army Hospital, San Francisco, to the *Journal of the American Medical Association* (June 13).

In Japan, Korea and Formosa as well as China, children's heads are shaved and kept shaved from the time they are one week old until they are about four, if girls, and eight or nine, if boys.

Examinations of 1,369 patients with leprosy in leprosariums in Japan, Korea and Formosa showed that 35% were bald because of leprosy infection of their scalps. In 11 countries where infant head shaving is not the custom, less than one in a hundred (0.3%) of patients have this scalp leprosy and baldness.

The germs of leprosy, the Army scientists state, must at some time leave the patient's body through the sweat glands. Heads shaved of their protective hair and "inevitably" nicked and cut from time to time during the shaving would give ready entrance to large numbers of the germs from an infected grown person.

In support of the skin-to-skin contact theory the Army scientists also point to the distribution of the first skin sores in children at the Culion Leprosy Colony, Philippine Islands. These appeared on both cheeks, elbows and knees and those parts of the thighs, buttocks and arms that would be in contact with the mother as she carried the baby in her hands and bare arms.

"Contraction of leprosy by healthy adults is rare and most reported cases are open to question," the scientists point out.

In a certain number of cases first recognized in a grown-up, the germs may have gotten into the body when the patient was a child and lain dormant for many years.

The way to control leprosy, Col. Cleve and Col. Pruitt state, is to separate the leprous person from the infant or child.

Science News Letter, June 27, 1953

CHEMISTRY

Synthetic Petrochemicals

► MOST OF the organic chemicals now marketed will in the future be made from petroleum, Dr. Gustav Egloff, director of research for the Universal Oil Products Company, predicted at the meeting of the Chemical Specialties Manufacturers Association in Chicago.

Citing the fact that thousands are already so based, he said that "the possibilities are almost limitless when one considers that there are now 600,000 organic compounds and in a few years there may be over a million. Not only are new chemicals continually being introduced but new specialty applications are being found for products already in use."

As an example, he noted the epon resins, which, used primarily for primers and floor varnishes, have also been applied to a variety of fields such as baking finishes and can coatings.

New combinations of the petrochemical products are also resulting in a wide range of interesting specialties, Dr. Egloff said. Pouches of a laminated plastic material consisting of polyethylene film on the inside and cellophane on the outside are used for orange concentrate.

"A 2.5 ounce bag of concentrate can be converted to 10 ounces of juice in 15 seconds, which saves about seven cents worth of labor for each glass of juice," he stated.

Among the outstanding new products with a wide range of possible applications is Hypolon, a chlorosulfonated polyethylene rubber. This product is completely resistant to ozone, has good resistance to abrasion, weather, heat and crack-growth. It is particularly applicable to such products as weather stripping, garden hose covers, radiator hose, and wire and cable covering.

It can be blended with other rubbers and made into tire treads without carbon black. It also can be dyed a wide range of colors.

Science News Letter, June 27, 1953

TECHNOLOGY

Dialing "Time" Gave Score to Series, Too

► MORE THAN a million New Yorkers dialed the telephone number that gave them the time of day during the 1951 World Series. Reason: Right after the time announcement, the recorded voice revealed the up-to-the-minute World Series score.

On the average, about 68,000 persons called the time number daily during the year. But 1,456,000 called it during the Series.

Describing recorded machine telephone announcements to the American Institute of Electrical Engineers meeting in Atlantic City, W. Bennett of the Bell Telephone Laboratories, Inc., said that the recorded weather announcement also was well received. New York callers averaged 71,000 weather inquiries each day during 1951, but on foul days weather calls sometimes shot up to 270,000.

Science News Letter, June 27, 1953

• RADIO

Saturday, July 4, 1953, 3:15 3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Pat Murphy, assistant national director, Red Cross Safety Service, will discuss "Summer Safety."

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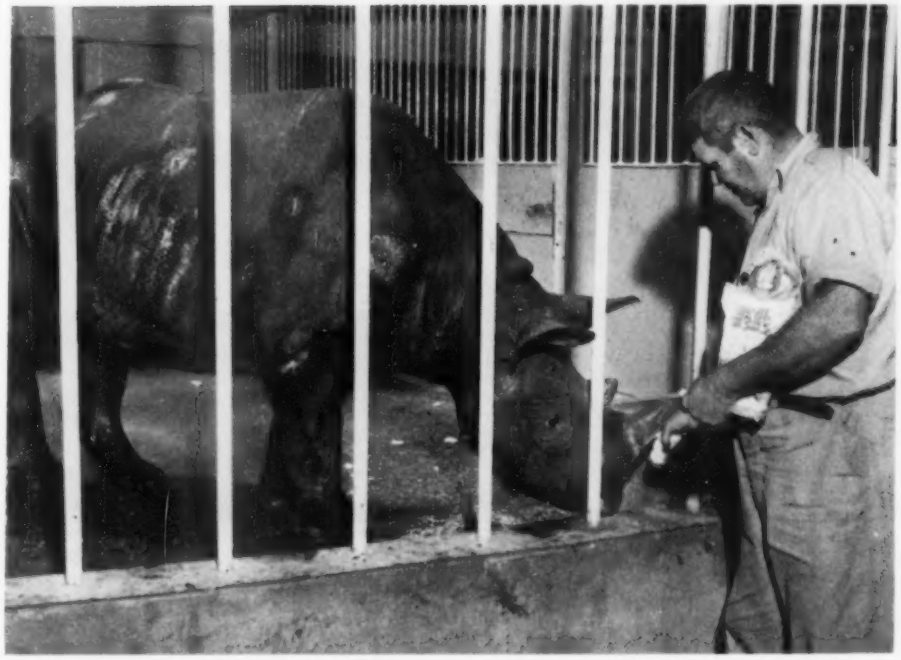

TWO-HORNED RHINOCEROS—Josephine, the two-horned black African rhinoceros recently received at the National Zoological Park, weighs about 800 pounds and is about two and a half years old.

CHEMISTRY

New Synthetic Rubber

Polyester rubber, made from chemicals other than those used presently in synthetic rubber, is developed. The material is tough with reinforcing agents.

► A NEW synthetic rubber has been produced by research that does about everything that other man-made rubbers do and outdoes the rubber tree as well — for tire treads, for inner tubes, for oil resistance, for resistance to aging due to oxidation, for toughness against cuts and gouging.

It is polyester rubber, not made from the chemicals used for the nation's present supply of synthetic rubber. N. V. Seeger of the Goodyear Tire & Rubber Co., Akron, Ohio, told the American Chemical Society's rubber chemistry division meeting in Boston of the researches done by himself, T. G. Mastin, E. E. Fauser, F. S. Farson, and E. A. Sinclair.

Polyester rubber has twice as great abrasion resistance as the best cold rubber now used for long-wearing tire treads. It is comparable to butyl rubber for holding air in inner tubes. It stands up against oil as well as neoprene and resists oxidation with the best butyl and acrylate rubbers. Its tensile strength is 50% to 100% greater than any other type of rubber-like material.

Coatings of the new rubber can be applied to protect shoe soles and heels, belts, flooring and truck tires that receive hard wear. The Goodyear name for the new rubber is Chemigum SL and it is described as an elastomeric polyester urethane.

The basic ingredients of polyester rubber are ethylene glycol and propylene glycol, familiar as antifreeze fluids. These are mixed with adipic acid, an intermediate in the production of nylon, and the resultant chemical is the polyester base of the new rubber.

This polyester is then treated with the chemical diisocyanate in an amount determined by the "reaction factor," the secret of the Goodyear development. This stops the solidifying reaction of the chemicals at a point where the mixture is just solid enough to be further processed into shapes in conventional rubber processing equipment.

When needed in the production of final assemblies, the rubber is given another diisocyanate treatment and formed into shape without the use of sulfur or accelerators for vulcanization. Carbon black and other reinforcing agents are not required to toughen the compound, although they may be used if desired.

Science News Letter, June 27, 1953

ENGINEERING

Trolleys More Economical Than Buses, Study Shows

► TROLLEY COACHES are more economical to operate than motor coaches, a 15-year study has revealed.

L. W. Birch of the Ohio Brass Co., Mansfield, Ohio, reported to the American Institute of Electrical Engineers meeting in Atlantic City that a survey of 14 transit companies showed trolleys averaged at least 3.5 cents less to run per mile than buses.

Chief advantage of the trolley is that it can be left out in the open during bitter winter weather. Buses must be garaged. Trolleys have a 15-year depreciation, whereas buses have a life expectancy of about 10 years.

Buses, however, are cheaper to operate from the fuel standpoint. They cost about 4.28 cents per mile. Trolleys consume about 5.22 cents of electricity per mile.

Science News Letter, June 27, 1953

PUBLIC HEALTH

Silicone Cream Protects Skin

► SILICONE FLUIDS are widely used in industry, and now one of them, polymethyl siloxane, has been made into a cream to protect the skin of industrial workers.

Good results with the cream in a trial in one industrial plant were reported by Dr. Raymond R. Suskin of the University of Cincinnati College of Medicine at the meeting of the American Medical Association in New York.

The cream is made with 52.5% silicone fluid mixed with the inert clay, bentonite. It can be put on the skin as a thin, inconspicuous film at the beginning of the work day and removed at the end of the work period. No harmful effects from it were seen after seven months continuous use.

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ENGINEERING

Tiny Motor to Power Aircraft Instruments

► A TINY electric motor that you can mail for six cents has been designed to fit into standard aircraft instrument cases only two inches in diameter.

Smaller than most women's thumbs, the precision induction motor is only 1.2 inches long, ⅜ inch in diameter and weighs about an ounce. Its spinning armature has about the same diameter as a pea.

L. T. Akeley and J. R. MacIntyre, General Electric Co. engineers, told the American Institute of Electrical Engineers meeting in Atlantic City that the motor works on two-phase, 400-cycle current, and that it has exceptional acceleration, stall torque and efficiency.

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ENGINEERING

Spark Gap Guards Plane During Lightning Storms

➤ MANY COMMERCIAL airliners now are equipped with a gadget that protects the plane should it be hit by lightning while in flight. Usually metal planes are reasonably safe even if struck. Sometimes, however, lightning can damage radio equipment and start fires.

The protective device consists of a condenser, a spark gap cartridge and several steel strips. The condenser is wired into the radio antenna lead-in near the point where the lead-in comes into the airplane. To lightning, the condenser presents an open circuit, but it does not stop radio signals from coming into the plane.

The spark gap cartridge is connected to the antenna and to the plane's fuselage. When lightning strikes the antenna, the condenser stops it from running into the plane. The lightning then jumps the gap in the spark cartridge and discharges safely to the fuselage.

Reporting to the American Institute of Electrical Engineers meeting in Atlantic City, J. M. Bryant, University of Minnesota, and M. M. Newman and J. D. Robb, both of the Lightning and Transients Research Institute, Minneapolis, said valuable data have been gathered in the last two years by 50 of the devices placed on American Airlines craft.

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MEDICINE

Typhoid "Shots" May Lessen A-Bomb Harm

➤ ORDINARY TYPHOID and tetanus immunization "shots" may afford a great deal of protection against certain radiation effects of the A-bomb.

This is indicated in research at the University of California at Los Angeles Atomic Energy Project conducted by Dr. George V. Taplin, Camille Finnegan, Philip Noyes and Gerald Sprague.

Many radiation deaths are said to be the result of a temporary depression of the activity of certain defender cells in the body. These cells, known as "macrophages," are found in body tissues and form a mobile defense unit that combats invading bacteria. Radiation apparently tends to breach the defenses, and fatal infections occur.

It is known that "macrophage" number and activity are increased by several immunizing agents, including tetanus and typhoid shots. Thus such shots might offset the depressing effects of radiation on their activity and thereby reduce mortality.

The cells' activity was measured by the rate at which they remove prodigiosin, a red pigment formed by a bacillus, from the blood of rabbits. This seemed to be an accurate index of bacteria disposal by the "macrophage" system.

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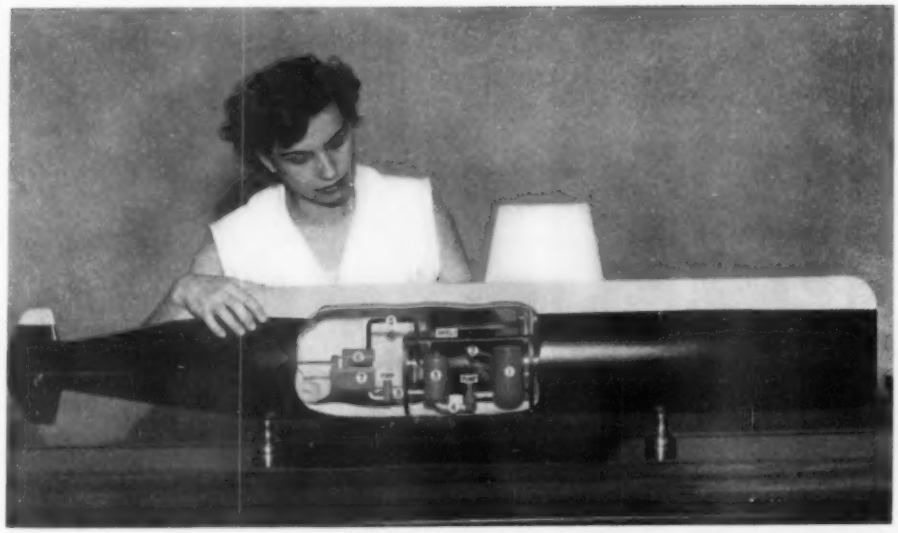

"NAUTILUS" MODEL—A model of the first submarine to be powered by atomic energy, on display at the Museum of Science and Industry in Chicago, shows how a nuclear reactor will furnish power.

METEOROLOGY

Use 18 Salvaged Radars

► THE WEATHER Bureau has 18 tornado, hurricane and storm radar tracking stations which did not cost the taxpayers one cent.

If replaced now with new equipment, these 18 radar sets would cost a total of $1,800,000.

Never able to get an appropriation from Congress for this vital tool in tracking and predicting the paths of tornadoes, hurricanes and other storms, the Weather Bureau begged several freight carloads of obsolete equipment from the Navy. It would have been thrown away otherwise.

One man in the Bureau's maintenance shop in Washington has been modifying this equipment practically in his spare time. Some modifications are needed so that the radar sets will track storms. The first set was put into operation in 1947. It has taken this man six years to get the other 17 into good weather-tracking condition and to install them. Latest station will be opened shortly in Little Rock, Ark.

Unfortunately, these obsolete radar sets can only track weather up to about 100 miles. Modern equipment, for which the Navy and Air Force can get appropriations, will track storms and see into the eye of a hurricane at ranges of up to 300 miles.

No appropriation has ever been granted for pay for the men who operate these sets. The regular weather observers at the 18 stations operate the sets and track the storms "in addition to their other duties," as the Army phrase goes.

Tornado, storm and line squall tracking stations are now at North Platte and Norfolk, Nebr.; Goodland, Dodge City, Wichita and Topeka, Kans.; Amarillo and Wichita Falls, Tex. Hurricane tracking radar sets are at Charleston, S. C.; Miami and Tampa, Fla.; Burrwood, La.; and Brownsville, Tex. A station which takes care of sudden storms in the New York City and New York harbor area has been installed there.

The Bureau gets free use of four more radar sets by cooperating with the University of Florida at Gainesville, with the Humble Oil Co. at Freeport, Tex., with the University of Chicago, and with the Civil Aeronautics Administration at the Washington National Airport.

The Bureau hopes to expand its radar coverage to Boston, Buffalo, N. Y., Detroit and St. Louis. Meteorologists generally think that every major city ought to have radar weather protection.

Science News Letter, June 27, 1953

ZOOLOGY

Chicken as Old as Human Centenarian

➤ ESMERALDA IS dead. The centenarian succumbed to cancer at her home in Cranbrook School, Bloomfield Hills, Mich.

In human terms, Esmeralda was only 12 years old; but to her fellow chickens, Esmeralda was an old lady indeed, with the equivalent of a 100-year human life span.

Up until a month before her death, the old matron had a 50% laying average.

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ASTRONOMY

Saturn Is Still Visible

Since Saturn is only planet to be seen in the evenings, July is a good month to become acquainted with constellations typical of a summer sky.

By JAMES STOKLEY

▶ WITH SATURN the only planet visible these July evenings, and that rather low in the southwest, we still have a good opportunity to get acquainted with the stars that are typical of a summer evening.

These are shown in the accompanying maps, as they appear about ten o'clock (your own kind of standard time) and an hour earlier in the middle of July. Add one hour if you are on daylight time.

Perhaps the most characteristic of these star groups is Scorpius, the scorpion, which is directly south and not far above the horizon. In it is the red star, Antares. To the left of the curved row of stars that form the scorpion's tail is Sagittarius, the archer, which has the outline of a teapot!

Just to the right of the scorpion is Libra, the scales, in which there are no very bright stars. Farther to the right is Virgo, the virgin.

This is the constellation in which Saturn shines, just above Spica, the brightest star in the group. The planet is slightly brighter, and its steady light makes it easy to distinguish from the twinkling glow of the star.

Brightest July Star

Most brilliant star of the July evening, however, is to be found high in the east, in Lyra, the lyre. This is Vega, about 2.75 times as bright as Spica, and it looks even more than that. Because it is so much higher, its light suffers less absorption passing through the atmosphere.

Vega is at the top of a triangle of bright stars which can easily be located. Below and farther north is Deneb, in Cygnus, the swan. In the southeast, almost as high, we find Altair, in Aquila, the eagle. This star may be recognized because of the fainter stars nearby, one just above, the other below.

Just to the right of Aquila are the constellations of Ophiuchus, the serpent-bearer, and Serpens, the serpent he is carrying. Between them, they cover a large area of the sky, although they contain no stars of the first magnitude.

The figure of Serpens is in two parts—one on each side of Ophiuchus. It is the only constellation so divided.

Looking toward the northwest we now find the great dipper coming into a good position. This figure is part of Ursa Major, the great bear. At the bottom of the dipper, which now hangs with the bowl downwards, are the pointers whose direction, followed to the right, brings us to Polaris, the pole star. This is Ursa Minor, the little bear, and at the end of the handle of the little dipper.

Following toward the south the curve of the three stars, Alioth, Mizar and Alkaid, which form the handle of the large dipper, we come to the sixth and the last of the first-magnitude stars now visible. This is Arcturus, in Bootes, the bear-driver.

If the curve of the handle is followed still farther south, it leads toward Spica and Saturn.

Other Planets Visible

Two other planets can be seen late these nights, rising in the east about three hours ahead of the sun, both in the constellation of Taurus, the bull. The brighter of the pair is Venus.

The other is Jupiter, which is shining more brilliantly than any of the other planets or stars. On July 22 Venus passes Jupiter, traveling toward the east.

Both Mercury and Mars are invisible in July because they are almost in the direction of the sun. On the 25th Mercury comes nearly in front of the sun, and on July 8 Mars is directly behind it.

Compared to Orion, which shines so brilliantly high in the winter evening sky, Scorpius, which is now seen low in the south, is considerably less conspicuous. But this is largely on account of its far southerly position, so that in July we see it as high as it ever gets, in our lifetime at least.

Anyone who has been fortunate enough to view it from the southern hemisphere and see it up near the zenith, has quite a different idea of this fine group of stars.

Scorpius is the southernmost of the 12 constellations of the zodiac, the path of the sun through the year, as well as of the moon and planets. The sun passes through the scorpion early in December. On Dec. 21, the day of the winter solstice, marking the beginning of winter, it stands just to the north of the upper of the two easternmost stars of Sagittarius, that is the spout of the teapot.

The star Antares received that name, which means "rival of Mars," because of its red color, much like that of the planet Mars. Its distance is such that its light, traveling at the speed of 186,000 miles per second, takes 172 years to reach us. Thus, we say, its distance is 172 light years.

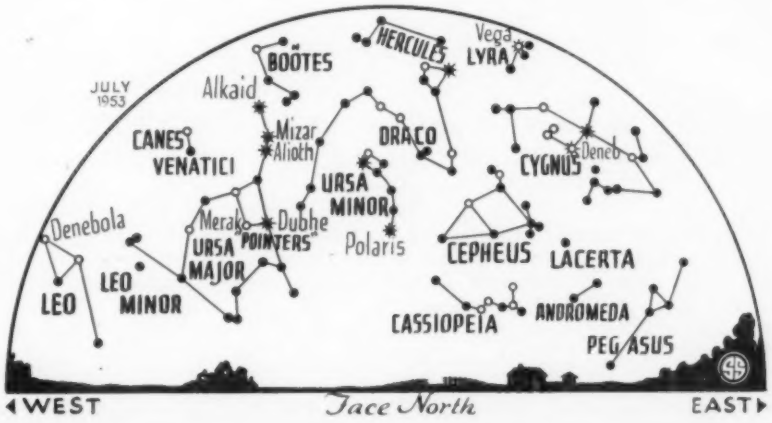
The constellation of Libra, the scales, next to the right and also one of the zodiacal constellations, is associated with Scorpius and, in fact, was once part of it. "Libra" means the scales, yet the Arabic names of the two brightest stars, Zubeneschamali and Zubenelgenubi, mean respectively the "northern claw" and the "southern claw."

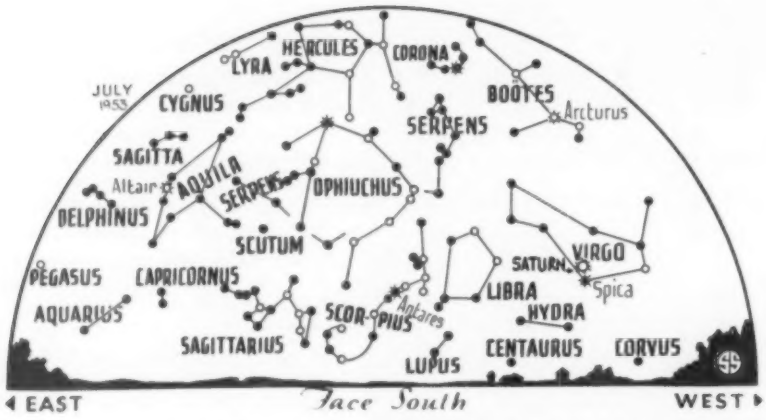
Thinking of these as part of a pair of scales, it is hard to understand the significance of these designations. However, when we realize that once the claws of the scorpion extended up into this part of the sky, they become more appropriate.

Two July Eclipses

The month of July brings two eclipses, though it is very unlikely that many of our readers will see the first one. This happens on the night of July 10. The dark inner core of the moon's shadow, inside which the sun would be completely hidden, fails to reach the earth at all.

However, over a large area around the North Pole and the Arctic regions, including northwestern Canada, eastern Alaska and northern Greenland, the outer part of the shadow will extend, and there a partial eclipse of the sun will be observed. At its maximum only about a fifth of the solar diameter will be covered, so it will not be of any great scientific interest.





☼ ✸ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

The month's second eclipse is a total one of the moon, which occurs when that body enters the shadow of the earth on July 26. At 5:32 a.m. EST, the moon begins to enter the shaded region, and that, of course, will be after the moon has set and the sun has risen in the eastern part of the nation. In the Midwest, especially the more westerly parts, it should be possible to see the partially eclipsed moon low in the west shortly before dawn.

Still farther west, in the Rocky Mountain states, it may even be possible to see it totally eclipsed. The mid-eclipse occurs at 7:21 a.m. EST, which is 4:21 Pacific Standard time.

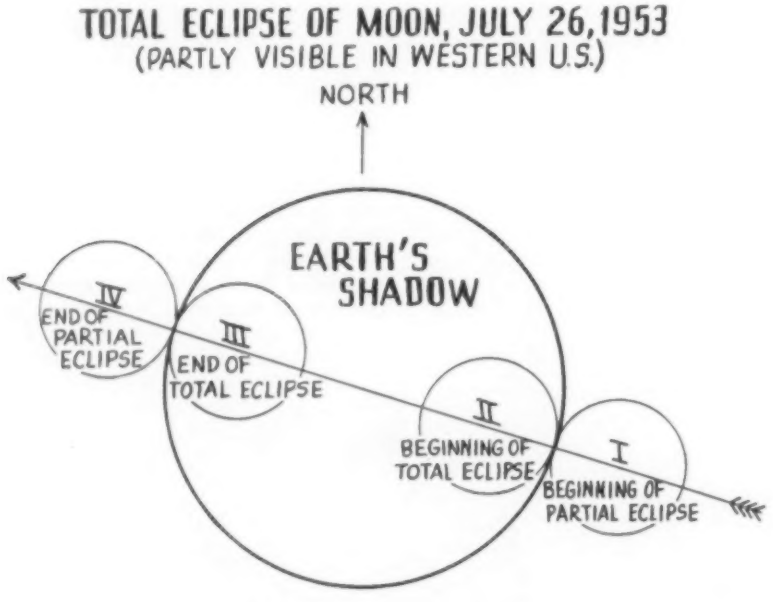
At San Francisco, sunrise occurs that day about 5:00 a.m. PST, so along the Pacific Coast the beginning, at least, of the total phase should be easily visible, provided one happens to be up at that early hour!

Celestial Time Table for July

July	EST	
3	5:03 p.m.	Moon in last quarter.
5	1:00 p.m.	Earth farthest from sun, distance 94,450,000 miles.
7	7:44 a.m.	Moon passes Venus.
8	6:15 a.m.	Moon passes Jupiter.
10	9:28 p.m.	New moon, partial eclipse of sun visible in Arctic regions.
16	10:00 a.m.	Moon farthest, distance 251,600 miles.
18	7:43 p.m.	Moon passes Saturn.
	11:47 p.m.	Moon in first quarter.
22	5:00 p.m.	Venus passes Jupiter.
26	7:20 a.m.	Full moon, total eclipse of moon visible from western U. S.
28	9:00 a.m.	Moon nearest, distance 225,200 miles.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, June 27, 1953



The large circle represents the shadow of the earth, and the small circles, I, II, III and IV, indicate the successive positions of the moon as it passes through the shadow. North is toward the top. Phases III and IV are not visible in the far western states. The four phases shown occur at the following times:

I	4:32 a.m. CST	3:32 a.m. MST	2:32 a.m. PST
II	5:30	4:30	3:30
III	7:11	6:11	5:11
IV	8:09	7:09	6:09

TECHNOLOGY

"Water Wings" Lift Small Boats From Water

See Front Cover

➤ THE SMALL boat skipping across the cover of this week's SCIENCE NEWS LETTER is one of the Navy's experiments with hydrofoils. Currently under test at the Naval Air Station, Patuxent River, Md., hydrofoils are wing-like structures that act in water similar to the way airplane wings act in air.

Although they produce considerable drag at slow speeds, "water wings" can actually lift boats from the water, sharply reducing overall resistance. This permits boats to travel faster than they could with their hulls plowing through the water.

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ELECTRONICS

Radio Circuits Built in Tiny, Replaceable Units

➤ RADIO, TV and other electronic sets of the future can be built of small, replaceable and standardized units assembled without soldering. Parts of circuits would be replaced like tubes.

The National Bureau of Standards is investigating a novel method of cellular electronic construction proposed by Dr. P. J. Selgin of its engineering electronic laboratory. The new method makes full use of printed electronic circuits, also a Bureau of Standards development.

Individual molded cells of plastic, less than an inch on all sides, contain one or two circuit elements, such as resistors, capacitors and inductors. Each of these cells has three contacts, one on the top and two on the bottom. These press against the printed or etched circuits that replace conventional wires. The springs that keep the units in place are extensions of the tube socket contacts.

Twelve cells of this sort are assembled in a block along with two electron tubes. Electronic mechanisms are assembled from such blocks. When trouble occurs in any place, the offending cell is simply replaced by a spare and the repair is made.

The Navy Bureau of Aeronautics is supporting the development to improve construction and maintenance of electronic equipment. Printed circuits got their start in the research that gave our armed forces the proximity fuse, which bursts a shell when it comes near a plane or other target even if it does not hit it. The proximity fuse was also a Bureau of Standards development.

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METEOROLOGY

No A-Bomb Weather Effect

▶ DR. VINCENT J. SCHAEFER, the original cloud seeder and rain maker, told SCIENCE SERVICE that he doubted very much whether the debris from an A-bomb explosion had anything to do with the recent series of tornadoes.

"From what I know about these explosions," he said, "I doubt if they could produce material which would make very good rain-making material. Silver iodide is the best, and I doubt if there were a lot of things as good as silver iodide."

Dr. Schaefer pointed out that the explosions kicked up some dust which is one of nature's instruments for making rain storms.

"But," he said, "the dust in an ordinary dust storm is so very much greater in amount than the little bit kicked up by an A-bomb explosion that I cannot see how the bomb's dust could have any effect on general weather conditions."

Weather Bureau experts point out that a tornado is only a relatively small by-product, in terms of energy, of general stormy conditions which spread over several states. The Michigan and Ohio tornadoes, for instance, were offspring of the stormy conditions over the Great Lakes states. When these conditions moved eastward, they spawned the tornado which took so many lives in Worcester, Mass.

This general stormy condition releases energy equal to many hundreds of thousands of A-bombs, they point out, and it is the product of even greater forces at work in our atmosphere over the entire northern hemisphere. A tornado itself, destructive as it can be, is a relatively puny thing, even beside an A-bomb. Averaging about 100 yards wide, about a mile high and traveling about 15 miles, it has energy only two to three percent of that of an A-bomb.

One thunderstorm is much more powerful, equal to about 50 A-bombs. Thunderstorms and hail storms are also products of such general stormy conditions as produced the recent tornadoes.

Finally, the meteorologists say, similar A-bomb tests at a similar time last year were accompanied by only an average number of tornadoes.

Having heard so much about rain making and the claims of being able to change the weather with a few pounds of silver iodide sprayed into the air, people very naturally believe that an A-bomb explosion might be connected with a tornado. Yet it would seem that an A-bomb does not produce the kinds of material which, according to the rain makers, could influence the weather, and that the forces responsible for the tornadoes are in fact many times more powerful than man's puny efforts with the atom.

Science News Letter, June 27, 1953

At *jet engine* operating temperatures, ordinary steel burns like paper.

• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ASTM STANDARDS ON PLASTICS—ASTM Committee D-20 on Plastics—*American Society for Testing Materials*, 705 p., illus., paper, $5.25. Sets forth 135 standards, including specifications, definitions, methods of testing and nomenclature for a wide range of plastics.

BUILDING AMERICA'S HEALTH — President's Commission on the Health Needs of the Nation — *Health Publications Institute*, 143 p., paper, $1.50, cloth $2.50. A one-volume condensation of the official five-volume report, this contains all the findings and recommendations plus summaries of the other four volumes.

CATALOG OF THE CYCLE COLLECTION OF THE DIVISION OF ENGINEERING, UNITED STATES NATIONAL MUSEUM—Smith Hempstone Oliver—*Govt. Printing Office*, 40 p., illus., paper, 40 cents. Not only a catalog, but also a history of the development and usage of cyclic vehicles from 1816 to the present time.

CHANGING MILITARY PATTERNS ON THE GREAT PLAINS: 17th Century Through Early 19th Century—Frank Raymond Secoy—*Augustin*, American Ethnological Society Monograph XXI, 112 p., $2.75. Shows each of the various military technique patterns of the Indians of the Great Plains, with emphasis on the changes brought about by the introduction of the horse and the gun.

CHILD PSYCHOLOGY—Lester D. Crow and Alice Crow—*Barnes & Noble*, College Outline Series, 267 p., paper, $1.50. Summary of research on the development of children from pre-birth growth through early adolescence. With review questions and answers.

CITY PLANNING IN SOVIET RUSSIA: With an Interpretative Bibliography—Maurice Frank Parkins—*Univ. of Chicago Press*, 257 p., illus., $6.00. Reviews the development of urban planning in the U.S.S.R. from its historical, legal, economic and political aspects.

COLLEGE PHYSICS—Frederick A. Saunders and Paul Kirkpatrick—*Holt*, 4th ed., 603 p., illus., $6.25. A thorough revision of "A Survey of Physics," this gives added emphasis to atoms and related matters.

DOING SOMETHING FOR THE DISABLED—Mary E. Switzer and Howard A. Rusk—*Public Affairs Committee*, 28 p., illus., paper, 25 cents. Shows the vast economies that can be achieved through application of modern methods of rehabilitation.

DOWN-EAST SPIRITUALS AND OTHERS—George Pullen Jackson—*Augustin*, 2nd ed., 296 p., illus., $6.00. A collection of some 300 religious folk songs in the New England tradition, an area which the author says is the ancestral home of spirituals.

EDUCATION FOR THE TALENTED IN MATHEMATICS AND SCIENCE—Kenneth E. Brown and Philip G. Johnson — *Govt. Printing Office*, Office of Education Bul. 1952, No. 15, 34 p., paper, 15 cents. A report of a Joint Conference of the Cooperative Committee on the Teaching of Science and Mathematics of the AAAS and the U. S. Office of Education.

FUNDAMENTALS OF PHYSICAL SCIENCE: An Introduction to the Physical Sciences—Konrad B. Krauskopf—*McGraw-Hill*, 3rd ed., 694 p., illus., $6.00. Intended for the non-science student, this provides the main facts in the fields of astronomy, physics, chemistry and geology.

GUIDES TO MEETING TOMORROW'S PRODUCTION NEEDS—M. J. Dooher, Ed.—*American Management Assoc.*, 64 p., paper, $1.25. Contains articles on Federal Controls by Michael V. DiSalle, After Defense Spending — What? by Walter Williams, and a panel discussion on Automation to Date: Progress Toward the Push-Button Factory.

HEBREW MARRIAGE: A Sociological Study—David R. Mace—*Philosophical Library*, 271 p., $6.00. A study of Hebrew ideas and ideals concerning sex, marriage, parenthood and family life.

INDUSTRY ENTERS THE ATOMIC AGE: Some Practical Problems in Applying Atomic Energy —M. J. Dooher, Ed.—*American Management Assoc.*, 31 p., paper, $1.25. Articles on The Atomic Energy Industry, The Use of Radioisotopes in Manufacturing Operations, The Place of the Manufacturer in Atomic Energy and The Meaning of Atomic Energy to Industry.

LABORATORY PROBLEMS IN GENERAL CHEMISTRY—Howard Nechamkin—*Crowell*, 274 p., illus., $2.50. Intended to prevent the college student from doing his laboratory work by "cribbing," the "unknowns" have been so selected that they may be altered easily from class to class and so that "correct" answers are not readily available in texts or handbooks.

MYTHOLOGY—Edith Hamilton—*New American Library*, 335 p., illus., paper, 50 cents. The classic stories of Greek, Roman and Norse mythology.

PRINCIPLES OF COLOR PHOTOGRAPHY—Ralph M. Evans, W. T. Hanson, Jr., and W. Lyle Brewer—*Wiley*, 709 p., illus., $11.00. Provides a basis for understanding color photography, with main emphasis on the underlying fundamental principles and unique problems.

REFRIGERATION IN AMERICA: A History of a New Technology and Its Impact—Oscar E Anderson, Jr.—*Princeton Univ. Press*, 344 p illus., $6.00. Covering the period 1750 to 195 this shows the relation of refrigeration to our national development, records the main trend in technological progress, etc.

A REVIEW OF THE BEETLE FAMILY CEPHALOIDAE—Ross H. Arnett, Jr.—*Smithsonian Institution*, U. S. National Museum Proceedings, Vol. 103, No. 3321, 6 p., illus., paper, free upon request direct to publisher, Washington 25, D. C. Reconsiders the taxonomy, affinities, and distribution of this group.

SPIRITUAL FOLK-SONGS OF EARLY AMERICA—George Pullen Jackson—*Augustin*, 2nd ed., 254 p., illus., $6.00. Contains 250 folk songs, each annotated with all available information on the "ancestry and progeny of text and tune."

SPRAY-TYPE DISHWASHING MACHINES—Joint Committee on Food-Equipment Standards—*National Sanitation Foundation*, 46 p., illus., paper, 50 cents. Standards set up by the NSF as to what methods of washing dishes, utensils and glasses are satisfactory from the health point of view for use in public eating places.

THE STABILITY OF ROTATING LIQUID MASSES —R. A. Lyttleton—*Cambridge Univ. Press*, 150 p., illus., $6.50. Reaches the conclusion, contrary to Jeans' view, that the dynamical evidence is against the fission hypothesis of formation of binary systems.

STATISTICAL SUMMARY OF EDUCATION, 1949-50—Rose Marie Smith—*Govt. Printing Office*, 52 p., paper, 20 cents. An abstract (with brief interpretive comments) of data collected by the Office of Education and other agencies from over 170,000 educational institutions.

TABLE OF ARCTAN X—*Govt. Printing Office*, National Bureau of Standards Applied Mathematics Series 26, 170 p., $1.75. This table of arctan x is believed to be the most comprehensive yet published. Applications include, in mechanics, plotting the vertical rise of a projectile.

TABLES FOR ROCKET AND COMET ORBITS—Samuel Herrick — *Govt. Printing Office*, National Bureau of Standards Applied Mathematics Series 20, 100 p., $1.75. To prepare for the anticipated development of rocket navigation, which focuses attention on rectilinear motion in the two body problem, these tables are presented.

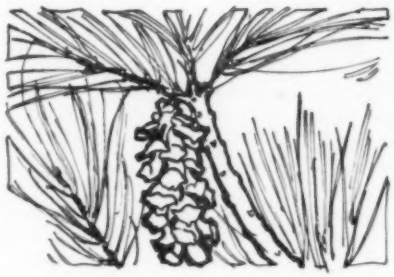
THE TRUE BOOK OF ANIMALS OF SMALL POND —Phoebe Erickson — *Childrens Press*, 44 p., illus., $2.00. Follows the small animals of a pond in Connecticut through the seasons. Reading level for Grades 2 and 3.

THE VERTEBRATE FAUNA OF THE SELMA FORMATION OF ALABAMA, PARTS III & IV: The Turtles of the Family Protostegidae and The Turtles of the Family Toxochelyidae—Ranier Zangerl — *Chicago Natural History Museum*, Fieldana; Geology Memoirs Vol. 3, Nos. 3 and 4, 306 p., illus., paper, $6.00. Material based on the fossils found in the Mooreville Chalk of the Selma Formation.

THE WORLD OF PRIMITIVE MAN—Paul Radin —*Schuman*, 370 p., $5.00. Describes aboriginal peoples in terms of their rational behavior and their positive achievements.

HORTICULTURE

NATURE RAMBLINGS



Before the Eagle

➤ ALTHOUGH THIS country has no national tree, as England has the oak and Canada the maple, a tree was used as symbol of American honor and independence long before the eagle was officially adopted as the device to be used on the Great Seal of the United States, and subsequently on our coinage and currency.

Until the Continental Congress adopted a national flag and specified its basic design, each state flew a flag of its own. The flag of Massachusetts, which floated over the stoutly defended breastworks at Bunker Hill, consisted of a white field displaying a green pine tree, with the motto: "An Appeal to Heaven."

This motto was suggested, no doubt, by the upward-pointing spire of the tree, so like the monitory steeples that reared themselves above all New England villages.

Even before it appeared on their flag, the pine tree was used as a symbol on the coinage of Massachusetts Bay Colony. The Pine Tree Shilling, struck in the seventeenth century, is one of the greatest of numismatic treasures.

Which particular pine tree was thus chosen for honor by the men of Massachusetts is not specifically stated, but there can be little doubt that it was the white pine. It was abundant in early days, it had great majesty and beauty, and was useful and valuable as well as beautiful.

Towering trunks cut from virgin forests made magnificent masts—important in a seafaring and shipbuilding community. Smaller specimens were hewn into logs for the early cabins, sawed into splendid, smooth lumber for the fine frame houses and churches that have made New England's early builders deservedly famous.

But, alas, we could no longer adopt the white pine as our national tree even if we wanted to. For just as we have practically exterminated the American eagle from all save a few still-wild spots under American sovereignty, so have we wiped out most of our white pine forests.

We have either prodigally chopped them down without taking the trouble to replant them, or more wastefully still, have permitted fire to ravage them unchecked. And the spread of a terrible tree disease, white pine blister rust, has made re-establishment of white-pine woodlands even more difficult.

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Questions

ASTRONOMY—How many planets are visible during July? p. 395.

• • •

CHEMISTRY—How many organic compounds are now being produced? p. 392.

• • •

ENGINEERING—What is the chief economic advantage of trolleys? p. 393.

• • •

MEDICINE—What is a recent clue to spread of leprosy? p. 392.

How might typhoid "shots" protect against radiation damage? p. 394.

• • •

Photographs: Cover, U. S. Navy; p. 391, Clifford E. Matteson; p. 393, Fremont Davis; p. 394, Museum of Science and Industry; p. 400, Minnesota Mining and Manufacturing Co.

MEDICINE

Polio Reports Inflated

➤ WE ARE having an inflation in polio cases reported. Gamma globulin, the material in blood that may protect against paralytic poliomyelitis, is probably responsible.

Total cases of poliomyelitis reported to the U. S. Public Health Service each week this season are running considerably above the cases reported about the same period last year. This makes it look like a bad polio year.

A "high proportion" of cases, however, are nonparalytic, and it is the nonparalytic cases being reported that are inflating the totals.

In the past, many nonparalytic cases undoubtedly did not get reported. Maybe the doctor was not sure whether the case was polio. More likely the parents did not call a doctor, thinking Junior's illness was just a summer cold or one of those feverish, upset stomach spells that children so often get for no apparent reason.

But today if Junior has a little fever, an upset stomach or headache, or all three, mother calls the doctor, hoping to get gamma globulin for Sister and any other children in the family. And the doctor, wanting to give his young patients every possible protection, reports the case to the state health department so that he can get some gamma globulin.

Junior probably has nonparalytic polio. Even without laboratory tests, there are signs by which the doctor can diagnose the ailment. The point is that with gamma globulin in the picture, doctors apparently are being called much oftener than in the past for cases of nonparalytic polio. So the total cases being reported this year are higher than the total reported last year, but not, probably, any higher than the actual number of cases reported and unreported, last year.

One other factor probably is responsible for some of the apparent increase in cases this year over last. That relates to the comparison on a weekly basis between years. Cases reported for the week ending June 6 this year, called the 22nd week, were compared with cases reported May 31 last year, also called the 22nd week. But actually, there is almost a week's difference there. It might be fairer to compare June 6 figures this year with June 7 figures last year, since at this season cases are increasing sharply each week.

Science News Letter, June 27, 1953

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6 D. C., and ask for Gadget Bulletin 680. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

RUBBER DISKS two inches in diameter are nailed to concrete form boards and produce undercut niches in the solidified concrete. When the form boards are pulled away, the disks pull out too, leaving niched, spoked holes in the concrete that become anchors for plaster. This does away with the need for wood lath, metal lath or roughening.

Science News Letter, June 27, 1953

CAMPING MATTRESS, made of a vinyl plastic, folds into a small convenient package. When inflated through its rust-resistant metal valve, the mattress measures 24 inches by 74 inches and fits into most sleeping bags. Its tufted design helps it keep its shape under varying body pressures, and makes sleeping on rough ground more comfortable.

Science News Letter, June 27, 1953

FLAME-SPRAY GUN, now under development, shoots porcelain material through an acetylene torch and fuses it to steel, giving the steel long-lasting protection against sea water, weather, smoke and chemicals. The tool promises to be useful in treating big structures such as bridges, ships and buildings.

Science News Letter, June 27, 1953

ABRASIVE FILE uses a roll of abrasive cloth instead of conventional file teeth for deburring and other filing and finishing

operations. The device features an 11-inch stroke, holds a roll of cloth more than six feet long, gives faster cutting, greater economy and more versatility through a wide choice of grits, the manufacturer says. It is shown in the photograph.

Science News Letter, June 27, 1953

SPORTSMAN'S SERVICEKIT contains 37 items to meet practically any emergency the hunter or fisherman might encounter in the field. The kit is pocket sized, weighs 10 ounces and is relatively inexpensive.

Science News Letter, June 27, 195

NEW BOW TIE antenna for ultra-high frequency television compares favorably with UHF corner reflector type arrays meant for extreme fringe areas, the maker reports. The bowtie part of the antenna is set in a wire radar-like reflector which increases receiving power and minimizes snow and ghost-producing signals.

Science News Letter, June 27, 1953

RUST-CONTROLLING OIL, formerly available only to industry, now can be bought in convenient household sizes to combat corrosion and tarnish stains on brass, copper and automobile chrome. Rust action is stopped when the oil is applied to steel sashes, screens, hardware, garden tools and metal furniture.

Science News Letter, June 27, 1953

DISPENSER FOR coffee and other free-flowing products such as flour, sugar and cereals, helps keep the housewife's kitchen tidy. At a turn of the handle, the dispenser measures out one level tablespoonful of coffee. The device holds from two to three pounds of coffee in its air-tight reservoir keeping it fresh.

Science News Letter, June 27, 195

Do You Know?

Some 4.3 trillion gallons of *rain* wet the U. S. each day.

If *candles* are dipped in thinned shellac, they should not droop during hot weather.

Once in a great while, a female "worker" bee will emerge from unfertilized eggs of African queen *bees*.

New rust-removing *chemicals* speed some car repair jobs as much as 20% by loosening nuts on corroded bolts.

One of every 10 *fire engines* made by a large manufacturer is not painted red; for instance, an individualistic customer recently ordered a "lilac number."

The super-giant *star*, Antares, has a diameter twice as great as that of the earth's orbit.

Synthetic *fibers* now are being made of limestone as well as of glass and coal.

SCIENCE NEWS LETTER

Index — Vol. 63

Nos. 1-26—January to June, 1953

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Lift out and insert in binder at beginning of volume.

ERRATA, Vol. 63, Nos. 1-26, January-June, 1953

PAGE	TITLE BEGINS	CORRECTION
63	Feed Ramie	Par. 4, line 5, *after* ramie *insert* on a dry weight basis.
115	New Magnetic	Col. 2, line 13, explored *for* explained; *delete* lines 15-18.
179	Photo Caption	Puma and mountain lion are the same animal. See SNL April 18, 1953, p. 249.
224	Do You Know?	Last item, last line, misleadingly *for* deceptively.
245	Pills Protect	Title and line 1, chemicals *for* pills; Par. 2, Dr. Harvey M. Patt . . . said that while it is not yet proved for man, if he knew an A-bomb attack was imminent and there was no way of escaping by seeking suitable shelter, he would take some cysteine as a last resort.
262	Furan Chemical	*Delete* first paragraph.
265	Whiskey Relieves	Par. 4, line 3, Peritrate *for* peritrate.
312	Slippery New Plastic	Par. 2, line 5, *read* Teflon, a Du Pont product, is so
213	Authoritarian Tendency	Par. 3, lines 2, 3, *delete* names of Ricciuti and Swanson.
313	Nervous System	Par. 2, line 2, *after* Sutherland *insert* chief of the division of psychiatric education and training at the Department of Mental Hygiene, State of Maryland, and associate professor of psychiatry,
325	Radio-phosphorus	Par. 2, line 3, subject *for* patient; par. 3, line 2, *after* method, *insert* tried so far on experimental animals,
338	Emperor Penguin	Par. 3, lines 2-3, *read* collected from rookeries along Antarctic shores.
338	Mast head	No. 22 *for* No. 19.
339	Books	Col. 2, line 8, Association *for* Associated; lines 14-15, Lowell Sumner *for* Lowell Canyon.
356	Do You Know?	Line 1, cactus *for* fig tree.
372	Do You Know?	Last item, line 3, kilogram *for* gram.